

Re: The dimension of fixed space of a matrix

Source: <http://sci.tech-archive.net/Archive/sci.math/2007-09/msg00083.html>

- *From:* "a\b" <a@xxx>
 - *Date:* Sat, 01 Sep 2007 12:37:13 +0200
-

On Sun, 26 Aug 2007 04:15:30 -0000, Gvnaena Pura wrote:

Greetings,

I'm wondering if there is an easy way for knowing the dimension of the fixed subspace of a matrix, when it act on a vector space. Here, by the fixed subspace, what I mean is the subspace W such that $Mx = x$ for all x in W where M is the matrix in question. It is also the kernel of the map $(I-M)$, where I is the identity. (maybe there is a formal for this, but I don't know). Thanks in advance.

reduce matrix of $M-I$

there is a way of know if the dimension of $\ker(M-I)$ is $\neq 0$
 $\{x: Mx=x\} \neq \{0\} \Rightarrow 1$ is eigenvalue of M
so if you prove that M has not an eigenvalue $= 1 \Rightarrow$
 $\{x: Mx=x\} = \{0\}$
.